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Timothy C Reluga* (timothy@reluga.org). *A theory of optimal antibiotic resistance management*. Preliminary report.

Evolution kills people. The increasing prevalence of antibiotic resistance in particular has led to increasing mortality from bacterial infections. In response, scientists are seeking new antibiotics and clinicians are seeking new usage strategies to make better use of the drugs we already have, while ethicists ponder balancing the conflicting preferences of individuals and communities. One thing that seems largely missing from the conversation is a simple theory of how optimal antibiotic resistance management should work. In this talk, I'll solve a simple optimal-control theory of antibiotic usage in the presence of resistance, contrast the solution with optimal harvesting theory, and discuss the implications for management. (Received September 17, 2015)